THE FUTURE OF COLOR:
CREATIVITY AND TECHNOLOGY

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ROGER DEAKINS, ASC

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Industrial Light + Magic

BEVERLY WOOD
Deluxe Laboratories

Roger Deakins

As a cinematographer, Academy Award-nominated Roger Deakins, BSC, ASC, has demonstrated how less is more. His masterful use of color has repeatedly demonstrated the impact of subtle manipulations. Preferring to color with light instead of filters, he creates images that are often dynamic and broad while maintaining a precise emotional impact. Cinematographers such as Deakins work very hard to capture specific emotional details of a story on film. They have a great deal of experience in orchestrating a story using images that are sometimes bold and dramatic, and sometimes extremely subtle. They understand the capacity of their medium, and often test its limits.

It is important for humans to communicate, and technology can be used to further that communication. Skillful cinematography must be supported by equally talented digital artists and tools that are not limiting to either. Furthering understanding of the technology and the art helps everyone communicate better.

Roger Deakins started in still photography and documentaries. He attended the National Film and Television School in England, where he met director Michael Radford ("Il Postino," "1984"). The two worked on documentaries together in school, and when Radford made the transition to drama, Deakins followed. Deakins' first Academy Award nomination came in 1994 with "The Shawshank Redemption." Soon afterward, he won the ASC award. His impressive body of work includes: "Sid and Nancy," "Pascali's Island," "Barton Fink," "Dead Man Walking," "Fargo," "The Hurricane," and last year's "Thirteen Days" and "O Brother, Where Art Thou?"

Joshua Kolden

A number of new image-representation technologies have surfaced over the last couple of years. In particular, work by Paul Debevec and Greg Larson has shown that images can store incredible amounts of unutilized information. With minimal effort, these data can be extracted and utilized to great effect. Additionally, intelligently increasing the information that is captured can produce remarkably powerful high-dynamic-range images in many areas of computer graphics. High-dynamic-range images were used in the production of the Experience Music Project motion-based attraction to successfully integrate lighting on the world's first CG human face replacement. In addition to remarkably realistic 3D lighting capture, these new image representations illustrate opportunities to store and manipulate images in new ways.

As computer hardware becomes less expensive and digital storage becomes easier to afford, it is becoming possible to address the subtleties of filmmakers' color decisions. It becomes economically feasible not only to maintain the image integrity through the entire digital process, from scan to print, but also to provide new creative tools. This added ability is possible because of the more complete representation of color. In addition, digital artists will need a more discerning "eye" to keep in touch with demanding filmmakers and become familiar with new tools for color manipulation.

Joshua Kolden studied film production at Columbia College, Chicago in the late 1980s. He went on to study computer science at the University of Arkansas at Little Rock. At UALR, he was invited to teach masters-degree courses in computer graphics and help develop the interdisciplinary computer graphics program. Over the last 13 years, he has contributed to innovations in the field of visual effects and computer graphics. Most recently, he supervised groundbreaking effects and animation for the Experience Music Project. This work involved human face animation and high-dynamic-range lighting effects integrated into and indistinguishable from live photography. Currently, Kolden lives in Los Angeles, and consults for leading visual effects facilities.

Neil Robinson

With the ever-accelerating pace of hardware and software development, it is all but inevitable that digital technology will effect all areas of filmmaking. The development of a digital grading system is just another step toward the full digital cinematic experience. The line between post production and grading is rapidly blurring, and in the process many new creative tools are emerging. Very soon, it will be commonplace for all motion pictures to be finished as a digital master before generation of the required deliverable media. The impact on costs, speed, and creativity should not be underestimated!

There will be "teething" trouble along the way, because the technical challenges are large. Asset management, data storage, transport, and archiving all provide areas ripe for development, as the shear size of the dataset required is astonishingly large! Combining high-dynamic-range image capture, post production, distribution, and projection all in the digital realm, digital grading delivers a realistic end-to-end digital motion picture experience devoid of any photo-chemical processes. The potential enhancements to creative story telling are limited only by the imaginations of their users. As many of us know, this is truly a creative business. After all, telling the story is what it's all about.

Neil Robinson graduated with a bachelor of electrical engineering in 1999 and a master of science in data telecommunications in 1992, and remained at the University of Salford, England until 1997, researching advanced high-speed telecommunication networks. He then applied his skills to the development of the Cineon compositing system as a contract engineer at Cinesite

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(Europe) Ltd, where he is now senior research engineer. He has been responsible for development of both 2D and 3D image processing tools, and motion picture VFX production pipelines at Cinesite (Europe). Notable career highlights include an award-winning video-to-film tool (now in use in four countries) and development of the image processing work flow for the Cinesite (Europe) Digital Lab. He has been involved with many motion picture and broadcast projects (credits include "Lost in Space" and "Animal Farm").

Beverly Wood
Photo-chemical processing techniques have been advancing over the past 20 years. New film stocks and the demand for high-impact images have propelled development of many interesting new technologies, such as Technicolor's ENR process, bleach bypass, and Deluxe's ACE. With the advent of movies such as "Seven," which made use of a sliver-retention process at Deluxe Labs for a few hundred release prints, the demand for these color-manipulation tools has increased.

Digital technology has yet to master even the basic color timing technology used in film laboratories, and yet few digital artists have had the opportunity to learn these techniques or understand their value to filmmakers and the audience. Because of this, there is a great deal of re-invention by talented people who recognize the limitations but do not understand how they have already been solved.

For many years, Beverly Wood has helped directors and cinematographers take advantage of and develop new tools for artistic expression. She is vice president of technical services and client relations at Deluxe Laboratories, where she consults with directors and cinematographers on the lab's high-tech services, including digital, and photo-chemical printing processes. Wood earned her masters degree in analytical chemistry from the University of Georgia. She worked for Kodak from 1980 to 1989 as a technical liaison with film labs, at Metrocolor Laboratories from 1989-1990 when MGM closed that facility, and as an assistant to the director for several made-for-cable movies. For the past eight years, she has been involved with special color-processing needs for such films as "Pleasantville," "Seven," "Sleepy Hollow," and "O Brother, Where Art Thou?"